Organ 3
Drawbar Organ

User Guide

LinPlug
Virtual Instruments

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Welcome

Thank you for licensing Organ 3!

In the late 1930s, Hammond released the B3 organ. Since then, the sound of the Hammond B3 has become one of the most common and most recognisable sounds in popular music. The presence of the Hammond B3 is virtually everywhere; from Gospel, Blues and Jazz, to Funk, Rock, Reggae and Dance styles. The original Hammond B3 weighed in at over 180 kilograms and required a separate Leslie speaker cabinet that was six feet tall and weighed almost as much as the organ itself!

Organ 3 is a software emulation of the original Hammond B3 (and two further historical electronic organs: the Vox and the Farfisa) designed for creating music on your PC or Macintosh. Organ 3 features all of the controls found on the original B3. These include the drawbars, a vibrato and percussion section, as well as a sophisticated dual-effects processor with a fully sync-able Leslie-Emulation. All these features have been incorporated into an easy-to-use interface, capable of producing a wide range of classic and modern organ sounds.

This manual describes all aspects of Organ 3 and is designed so that your use of this instrument is as efficient and enjoyable as possible.

At LinPlug we're very proud of Organ 3; it's the result of a long and extensive period of research into the famous Hammond B3 organ and its various components. We hope you get a lot of pleasure using Organ 3 and that it becomes an integral part of your music-making.

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Installation

Installation on Mac

The LinPlug Organ 3 comes with its own Installer. After downloading the Organ 3 you will find a file named "OrganInstaller3xx.dmg " located in your download folder. Double-click this file to decompress and open the image, then double-click the installer program to begin the installation process. You will be guided through the installation process.

The instrument file "Organ 3" and the 3 presets will now be placed in the right directory for virtual instruments on your Mac. The next time you start your host software the LinPlug Organ 3 will be listed in the host's instrument list.

Installation on PC

The LinPlug Organ 3 comes with its own Installer. After downloading the Organ 3 you will find a file named " OrganInstaller3xx.exe " located in your download folder. Start this program to begin the installation process. The Installer will guide you through the installation process.
Make sure you choose the right directory, so your host software finds the Organ 3. Refer to your host software's manual if you are unsure about where the host software plug-in directory is located.

The instrument file "Organ3.DLL" and the presets will be placed in the chosen directory. The next time you start your host software the Organ 3 will be listed in the host's instrument list.

Common to Mac and PC

After you've installed and opened the full version of the Organ 3, go to the instrument's “Settings” tab. The S/N edit box should read "Enter here". Enter the serial number you have received into the S/N edit box. If the serial number has not been entered or it has been entered incorrectly, the full version of the Organ 3 will not play any notes.

If you have any questions regarding the installation of Organ 3 please contact our support team at www.linplug.com/support/support.htm.

Overview

Organ 3 is a 64 note-polyphonic* drawbar organ with some extraordinary features. It is based upon the classic drawbar organ concept und features 3 manuals (Pedal, Lower, Upper), each with independent drawbars and MIDI channel. The manuals can be combined using the various stack & split modes. The output of the drawbars is then sent to the excellent Organ 3 dual-effects processor.

The structure of Organ 3 can be divided into the following sections: on the left you find the instrument (Main Section) with its three *manuals*. Located above the manuals is the *Drawbar Section*. To the left of each manual are *individual controls* for Spread, the switches for Percussion and Vibrato as well as the controls for Release and Volume.

The right side of Organ 3 contains the additional functions, divided into the menus "*Organ*", "*Effects*" and "*Settings*". You open these menus by clicking on the specific tab.

The "*Organ*" Menu contains the controls for Percussion, Vibrato, Master, Glide, Volume, Pitch Bend, stack/split-modes and ECS.

The “*Effects*” Section contains all controls of the dual-effects processor.

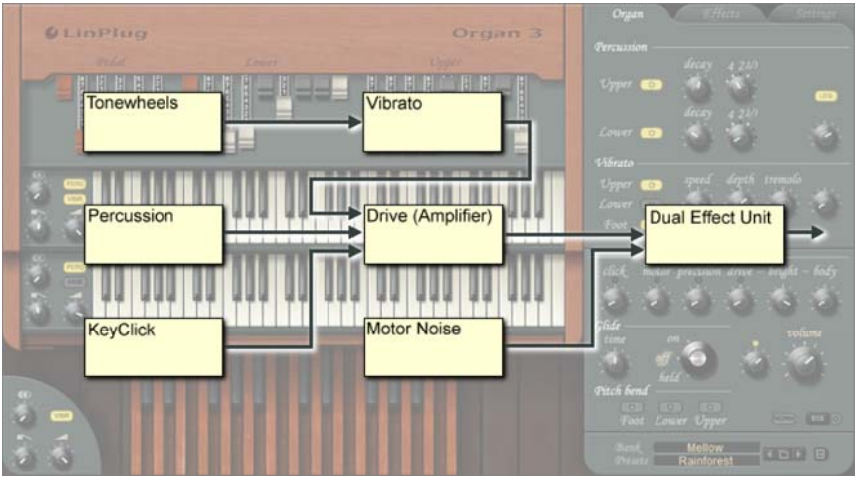
In the “*Settings*” menu you find the Master Tune, MIDI-settings, the tonewheel, B3 mode and the envelopes of the three manuals.

The “*Preset Browser*” is located at the bottom of the right side. It is always visible.

*depending on the power of your computer’s CPU.

Structure

Audio signals are generated by the *tonewheels* using the pitch information from Organ 3´s MIDI input. The MIDI input is automatically connected to the MIDI output of your host software.



The output of the *drawbars* is sent to the *Vibrato* section. The output of the Vibrato section is then sent to the Amplifier (*Drive*) section. The *Percussion* section and the *Keyclick* section both send their output to the

Amplifier (*Drive*) section. The output of the Amplifier (*Drive*) section is then sent to the *dual-effects processor*. In *the "Master Section*" you can also add Motor Noise, Keyclick and adjust the simulated "age" of the organ.

The audio outputs of Organ 3 are automatically connected to the inputs of your host software's mixer. Here you can set the pan position of Organ 3's output.

The design of Organ 3 imitates that of a real drawbar organ. As a result, when notes in a higher keyboard range are played, the overall sound becomes less bright. This is because a drawbar organ utilises a limited range of harmonics, which wrap around at particular points in the instrument's upper range. However, this property can also be deactivated (described in the chapter "B3 mode").

Hopefully, this chapter has given you a brief overview of how Organ 3 works. More detailed information can be found in the following chapters.

What's new in Organ 3

- now 3 individual manuals (Upper, Lower, Pedal)
- manual settings can be saved/loaded and copied/pasted
- Percussion
  - separately adjustable for Upper and Lower
  - adjustable volume
  - adjustable pitch
- separately switchable Vibrato for Upper, Lower and Pedal
- Spread for Upper, Lower and Pedal
- adjustable "age"
- drive with adjustable brightness and body
- adjustable velocity response (from off to full)
- new Glide mode with "Held" mode and adjustable time
- per manual switchable Pitch Bend response
- now two effect units with either Rotary, Reverb, Delay, Chorus, Gator or Crusher effect, all programmable
- enhanced ECS with support for endless dials and predefined settings for the NI B4D controller and the Doepfer d3c
- controller-sliders can be inverted (for use of e.g. Behringer BCF2000)
- microtonal support of TUN files
- 12 tonewheels to choose from including Farfisa and Vox waves
- ADSR envelope per manual
- layer and split modes with adjustable split point
- +- 4 octaves transpose per manual
- switchable B3 compatibility
  - foldback
  - tonewheel sync
  - drawbar volume
  - percussion switch behaviour
  - drawbar continuous / step mode

Controls

Users have the option of controlling Organ 3´s dials in either a circular or a linear manner depending on the *Dial Mode* setting, located under the "*Settings*" menu.

Holding down the ALT key while clicking on a control changes the selected control's value a minimum step upwards (when clicking in the upper half of the control) or a minimum step downwards (when clicking in the lower half of the control).

Holding down the CTRL key (PC) respectively COMMAND key (Apple) while clicking on a control sets the control to its default value (e.g. for volume controls it sets the control's value to -6 dB).

All controls can be automated using external MIDI messages. To do this you need to use Organ 3's ECS (Easy Controller Setup) which is described in the "*Org*an *Menu*"- section of this manual.

The Main Section

The "*Main Section*" of Organ 3 is located on the left side of the user interface. This section contains the *drawbars*, the three *manuals* and –to the left of the manuals- the *special controls* for each of the manuals.

The three manuals are called: the "*Upper Manual*", the "*Lower Manual*" (the one in the middle) and the "*Pedal*" (at the bottom).

Manual Controls

To the left of the three manuals you can find individual controls for the *Spread* effect (the “two circles”-symbol), the *Release* time (the decay time of the sound after you’ve released a key) and *Volume* control. There are also two buttons: „*Perc*“ & „*Vibr*“. „*Perc*“ switches the Percussion Section on and off, „*Vibr*“ activates/deactivates Vibrato for the according manual.

The Spread dial controls the intensity of the polyphonic unison, creating a sound as if several organs were played simultaneously. Turning the *Spread* dial to the right detunes those “imaginary” organs and the sound of the manual becomes fatter. Spread doesn’t affect the polyphony of Organ 3 but increases the utilisation of your computer’s CPU.

Note: Pedal can’t make use of the Percussion Section.

The “Drawbar” Section

The *Drawbar* Section is the most important part of Organ 3, as this is where the instrument's overall sound is determined. The Drawbar section is located above the three manuals.

One of the reasons why the original Hammond B-3 became popular, and remains so to this day, was because of its versatility. And just like its predecessor, LinPlug's Organ 3 can sound like a wide range of instruments and ensembles ranging from a carnival, a horn section and a big band, to a small jazz combo, a funk group, a percussion section or a flute. How can all these different sounds be created with one instrument? The answer lies in the drawbars.

Organ 3's drawbars are used to set the level of the up to nine harmonics that make up the instrument's sound. Moving from left to right these harmonics are:

16"	the sub-octave	-12 semitones	0.5th harmonic
5 1/3"	the fifth	+7 semitones	1.5th harmonic
8"	the fundamental		
4"	the octave	+12 semitones	2nd harmonic
2 2/3"	one octave and one fifth higher	+19 semitones	3rd harmonic
2"	two octaves higher	+24 semitones	4th harmonic
1 3/5"	two octaves and a third higher	+28 semitones	5th harmonic
1 1/3"	two octaves and a fifth higher	+31 semitones	6th harmonic
1"	three octaves higher	+36 semitones	8th harmonic

All of these except the 1 3/5" drawbar are either roots or fifths. The 1 3/5" is a third. Each drawbar's colour indicates its relationship to the fundamental pitch. The white and brown drawbars are called the "*consonants*" and comprise all the roots and the lower fifths. The black drawbars are called the "*dissonants*" and consist of the higher fifths and the third. Using this set of harmonics, a wide range of sounds can be created.

The Pedal only contains drawbars for the 16", 5 1/3", 8", 4", 2 2/3" and 2".

Each drawbar has eight continuously-variable degrees to which it can be "drawn" or pulled out. A setting of eight is the loudest, while all the way in silences the drawbar. Thus, each drawbar or "stop" can be "voiced" or individually altered, even while the instrument is being played.

On its own, the fundamental drawbar generates a sine wave, thus producing a pure flute-like tone. Adding odd harmonics creates a square wave, producing a more clarinet-like tone. The odd harmonics "squared" generate a triangle wave, thus producing a string-like tone. Finally, all harmonics together generate a sawtooth wave, producing an oboe-like tone.

Drawbar settings use the same kind of premise; various levels and volumes of harmonics are used to create different sounds. There are a limitless number of tone qualities and endless shades of dynamic level available on the LinPlug Organ 3. Drawbar setting (00 6200 000) is an example of a flute tone. Drawbar setting (00 4345 554) is an example of a violin tone. Drawbar setting (00 6876 540) is an example of a trumpet-like

tone, and Drawbar setting (54 5444 222) is an example of an organ-like tone. A typical jazz setting is 88 8000 000. This used by most jazz players 90% of the time, with 88 8400 080 being used for a bit more of a whistle during solos, while 80 0000 088 is used for high-end choral voicings.

You may have heard the expression, "pulling out all the stops". The drawbars on Organ 3 are the stops referred to in this expression. "Pulling out all the stops" (drawbar setting 88 8888 888) is the biggest sound possible on Organ 3. It is usually reserved for loud chord solos, crescendos and climaxes. Of course, there are an endless number of other possibilities, and every player has his or her own particular setting, or 'sound'. Experiment and see what you can come up with!

The Preset Browser

The “Preset Browser” is located at the bottom of the right side. It is always visible.

„Bank“: *Bank* is the name of the folder, in which the actual preset had been saved. New banks can be made by creating new folders in the “Organ 3 Banks” directory. You can select a different Bank by left-clicking on the Bank name.

„Presets“: the preset name is displayed for your reference. It’s also the file name under which the preset had been saved. By left-clicking a Preset name you open up a menu where you can select a different preset.

load: the button labelled with the "folder" icon allows you to load Organ 3 presets.

Prev/Next: once you have loaded a preset you can use the "arrow" icons on either side of the "folder" icon to browse within the currently selected directory. This significantly reduces the time taken to locate and load presets.

Save: the button labelled with the "disk" icon enables you to export Organ 3 presets. Clicking on this button opens a file dialogue allowing you to choose the directory and file into which you want the preset to be saved.

Organ 3 loads and saves all of its presets directly to hard disk so your computer's RAM does not limit the number of available presets

The „Organ“ page

The “*Organ*” page is located on the right side and is accessed by clicking the “*Organ*”-tab. The “Organ” Menu contains the controls of the Percussion Section, Vibrato, Master, Glide, Volume Pitch bend on/off for each manual, the Play Mode and ECS.

The Percussion Section

To the right of the „*Upper*“ and „*Lower*“ titles are two buttons which turn *Percussion* for the Upper and Lower manual on / off. (This can also be done using the “*PERC*”-buttons to the left side of the manuals.)

To the right of these *on/off*-buttons are the controls for the *Decay* time of Percussion and the *drawbar-selector* that is to be used by Percussion.

The “*Leg*” button determines whether the percussion is triggered for legato notes.

“Volume” controls the overall volume of the Percussion Section.

The Vibrato Section

The *Vibrato* section is located in the middle of the "*Organ*" Menu. The controls in this section are used to add *vibrato* and *tremolo* to Organ 3's output.

The leftmost buttons turn *vibrato* on or off for each of the three manuals . This can also be done using the "*VIBR"* Button to the left of the manuals.

Speed: sets the *speed* of the vibrato. Vibrato speed can be synched to the song tempo using the pop up menu under the *speed* dial. See Appendix C for a list of all sync settings.

Depth: determines the *depth* of the vibrato effect (periodic change of the pitch).

Tremolo: determines the *depth* of the tremolo effect (periodic change of the amplitude).

The dial to the right of the *Tremolo* control is the "*Chorus*" dial. Mixing the vibrato-signal with the unprocessed sound creates a special, Hammond B3-typical *Chorus* effect. The original B3 offered only three intensity-"steps". The Organ 3´s *Chorus* dial is continuously adjustable.

The Master Section

The *Master* Section is located under the Vibrato Section. It contains controls for Click, Motor, Age, Drive, Bright and Body as well as Volume and Velocity dials.

“Click”: sets the amount of *keyclick* applied to each note being played. The "click" is a very short sound that was produced on classic drawbar organs when a key was pressed.

Motor: adjusts the amount of *motor noise* that is added to the output. On classic tonewheel organs this sound was always present to some degree.

„Age“: simulates the “*age*” of the organ. This is done by adding random changes to the sound of the instrument that were typical for old and hardly-used mechanical organs.

„Drive“: determines the degree to which Organ 3's output is *distorted*.

„Bright“: changes the sound of “Drive”. Turned to the left the sound will be darker, turned to the right will cause Organ 3 to “scream”. “*Bright*” works like a Lowpass-Filter.

„Body“: further changes the sound of “Drive”, too. It functions like a Highpass-Filter.

The small indicators above the controls for *Click*, *Motor*, *Age* and *Drive* make clear whether the according control is in use or not.

“Velocity” To the right of the *Glide* Section you can find a small dial that controls the velocity range that is used to modulate the overall volume of Organ 3. Turned to the left means that all notes will sound at maximum volume, no matter how hard you hit a key. Turned to the right Organ 3´s volume will fully depend on how hard you touch your keyboard.

The big **„Volume“** dial sets the overall *volume* of Organ 3.

Glide

The “*Glide*” controls are located under the *Master* controls. When you activate *Glide*, the pitch of the notes you play “*glide”* from one note to the next note (also known as “Portamento”).

„*Time*” controls how fast the pitch “glides” from one note to the next one.

To the right of the *Time* dial is the *on/off/held* control. *On/off* simply turns Glide *on* (all notes “glide” into another) and *off* (none of the notes you play will “glide”). *Held* activates a special *Glide* mode: the pitch will only glide when you press and hold a key and then press another key.

Pitch bend

At the bottom of the “*Organ*” Menu, (above the *Preset Browser*) are three buttons that activate/deactivate *Pitch bend-recognition* for each of the three manuals. The intensity of the *Pitch bend* can be adjusted in the “*Settings*” menu.

Play Mode

Located to the right of the *Pitch bend*-buttons is a small button that lets you select one of five possible “*Play Modes*”:

Norm: the three manuals receive on individual MIDI-channels. If the MIDI-Channel in the "*Settings*" Menu is set on channel 5, the Upper Manual receives its MIDI-information in channel 5, the Lower Manual on channel 6 and the Pedal on channel 7. If the MIDI-Channel in the "Settings"-Menu is set on channel 16, the Upper Manual receives its MIDI-information on channel 16, the Lower Manual on channel 1 and the Pedal on channel 2.

Lay 1: the manuals are „*layered*" and receive MIDI-information on all three MIDI-channels simultaneously. The volume of the Upper and Lower Manual are faded into each other according to the *velocity value*. At low velocity values the *Lower Manual* will sound louder than the Upper Manual. At high velocity values the *Upper Manual* will sound louder than the Lower Manual.

Lay 2: the manuals are „*layered*" and receive MIDI-information on all three MIDI-channels simultaneously. The volume of the Upper and Lower Manual are faded into each other according to the played *MIDI-note number*. When you play lower keys the *Lower Manual* will sound louder than the Upper Manual. When you play higher keys the *Upper Manual* will sound louder than the Lower Manual. Downwards MIDI-note number 36 only the *Lower Manual* will be heard, upwards MIDI-note number 84 only *the Upper Manual* will be heard.

Spl 1: Upper and Lower Manual are "*split*" at the *split points* which are defined in the "*Settings*" Menu. At the split point and *above* you hear the *Upper Manual*. *Under* the split point you hear the *Lower Manual*. Organ 3 receives on the MIDI-channels of the Upper and Lower Manuals simultaneously. The Pedal receives on the third MIDI-channel and is not affected by the split points.

Spl 2: complete-split. Upper Manual, Lower Manual and Pedal are "*split*" at the split points that are set in the "*Settings*" Menu. Organ 3 receives its MIDI-information on all three MIDI-channels simultaneously.

ECS

The ECS (Easy Controller Setup) buttons to the right of the *Play Mode* button make it simple to control Organ 3 from an external MIDI controller (either hardware or software).

All you have to do is switch on the small button to the right of the ECS button, select a Organ 3 parameter with the mouse and then send some MIDI messages from your MIDI source. That's all there is to it! From now on you can change this parameter with that controller. In addition to this, more than one controller can be defined to change a particular parameter. In fact, you can define up to 128 parameter-controller-combinations. This does not depend on the type of controller you have nor the particular MIDI Control Change messages it sends. Don't forget to switch off the small ECS button after you have finished using it! As long as *ECS learn* is activated the small button will be shining.

Left-clicking the ECS-button opens up a menu where you can select one of the following ECS-functions:

Off: switches the ECS learn- & clear-mode *off*.
Learn: activates the ECS-learn mode. Don't forget to switch "*Learn*" off after assigning combinations!
Clear: clear parameter-controller combinations of Organ 3 parameters. Simply select "*clear*" and change the parameter you want to get rid of the according MIDI-controller. Don't forget to switch "*Clear*" off after erasing combinations!
Clear all: clear all parameter-controller combinations of Organ 3.
Load: load parameter-controller combinations.
Save: save parameter-controller combinations.

See Appendix B for a list of all predefined ECS assignments. The predefined assignments can be replaced with the assignments of your choice by the procedure we described in this chapter.

The „Effects" page

The „*Effects*" page is located on the right side of Organ 3's user interface. You open it by clicking the "*Effects*"-tab. In the "*Effects"* Menu are the controls of the dual-effects processor.

First, the output of the drawbars is sent to Fx 1 and then passes Fx 2. You can turn Fx 1 and Fx 2 *on* and *off*, using the buttons to the right of the effect type-selections.

The following effects types are available: *Rotary*, *Reverb*, *Delay*, *Chorus, Gator* and *Crusher*.

Rotary

The „*Rotary*“ effect simulates the sound of a Leslie Speaker Cabinet.

The original Leslie speakers that usually accompanied the B3 consisted of a single cabinet containing two speakers, one for the higher frequencies and one for the lower frequencies. Both speakers were mounted on a separate motor that rotated the speaker at two speeds; *slow* and *fast* (the speaker could also be *stopped*). Organ 3's rotary speaker simulation enables you to control a wide range of speaker parameters including the *slow* and *fast speed* settings, as well as the motor *acceleration* settings and the *crossover frequency* of the low and high frequency speakers.

The *Rotary* effect contains three basic functions, which are controlled by the buttons to the left of the effect’s dials.

on/off*: starts* and *stops* the rotation of the Leslie’s speakers. This function is NOT identical with the *on/off* buttons to the right of the *effect type*! These buttons switch the *signal processing* on and off, while the *on/off* of the Leslie cause the speakers to start or stop *rotating*.

SLO: sets the speaker rotation to the *slow speed* settings.

FAS: sets the speaker rotation to the *fast speed* settings.

To the right of the *on/off, SLO* and *FAS* buttons are the dials for the *speed* and *acceleration* of the high frequency speaker and the low frequency speaker.

lo slow: sets the *slow rotation speed* of the *low frequency speaker*. The *lo slow* speed can be synched to the song tempo using the pop up menu beneath the *lo slow* dial. See Appendix C for a list of all Sync settings.

hi slow: sets the *slow rotation speed* of the *high frequency speaker*. The *hi slow* speed can be synched to the song tempo using the pop up menu beneath the *hi slow* dial.

lo accel: sets the *rate of change* in speaker rotation speed for the *low frequency speaker* from *Off* to *Slo*(w) to *Fas*(t) and vice versa. *lo accel* speed can be synched to the song tempo using the pop up menu beneath the *lo accel* dial.

hi accel: sets the *rate of change* in speaker rotation speed for *the high frequency speaker* from *Off* to *Slo*(w) to *Fas*(t) and vice versa. *hi accel* speed can be synched to the song tempo using the pop up menu beneath the *hi accel* dial.

X-Over: sets the *crossover frequency* between the rotary speaker's low and high frequency speakers.

lo fast: sets the *fast rotation speed* of the low frequency speaker. The *lo fast* speed can be synched to the song tempo using the pop up menu beneath the *lo fast* dial.

hi fast: sets the *fast rotation speed* of the high frequency speaker. The *hi fast* speed can be synched to the song tempo using the pop up menu beneath the *hi fast* dial.

width: sets the "*size*" of the speaker cabinet and influences the brightness of the sound.

depth: sets the intensity of the *Doppler* effect.

An example for acceleration settings:
If "lo accel" is set to 1/1, "hi accel" to ½ and you switch the *speed* of *Rotary* from *slow* to *fast*, the acceleration of the low frequency speaker will take one note (4 beats in a 4/4 bar) to reach the fast speed, while the acceleration of the high frequency speaker will take a half-note (2 beats in a 4/4 bar).

And now...."pulling out all the stops" of the Rotary:
As the *speed* settings are also sync-able, you could change the speed of a 1/16-note-synced tempo to an ¼-note-synced tempo in the duration of a ½ note. Give it a try! The sound of such a precise working *Rotary* is absolute fantastic and Organ 3 is the very first organ providing such a *Rotary* effect!

Reverb

The *Reverb* effect is used to add ambience to the sound. It features the following controls:

predelay: the *predelay* dial enables you to delay the processed signal by a given amount so as to achieve a more natural reverberation. Normally,

shorter *predelay* times are applied in the case of smaller room sizes while longer *predelay* times are applied in the case of bigger room sizes. The *predelay* time can be synched to the song tempo using the pop up menu beneath the *predelay* dial. See Appendix C for a list of all sync settings.

room: the *room* dial is used to set the *size* of the simulated room. The *room size* varies from a small chamber up to a huge hall.

damp: the simulated room's wall materials can be adjusted with the *damp* (Damping) control. This parameter ranges from practically loss-free reflecting walls up to very absorbent walls. In practical terms, the amount of *damping* determines the amount of higher frequencies that are contained in the processed signal: The higher the *damp* setting, the less higher frequencies are contained in the processed signal.

diffusion: The *diffusion* control is used to set the number of diversion stages that are applied to the input signal. As the value of the *dif* control is increased the reverberation becomes smoother and more homogeneous. Lower values produce a rougher, lower quality sound.

wet: The *wet* dial allows you to set the balance between the processed "*wet*" signal and the original unprocessed "*dry*" signal.

Delay

The Delay effect can be used to create "echoes" and other related effects. Organ 3´s Delay offers three delayed channels: *center*, *left* and *right*.

Center: the *center* dial is used for setting the *center delay time*. The *delay* time can be synched to the song tempo using the pop up menu beneath the *delay* dial. See Appendix C for a list of all Sync settings.

left: the *left* dial is used for setting the *left delay time*. The *delay time* can be synched to the song tempo using the pop up menu beneath the *delay* dial.

right: the *right* dial is used for setting the *right delay time*. The *delay time* can be synched to the song tempo using the pop up menu beneath the *delay* dial.

pan L: sets the stereo-panorama-position of the "*left*"-delay.

pan R: sets the stereo-panorama-position of the "*right*"-delay.

feedback: the "*feedback*" dial allows you to set the number of times the signal repeats or "echoes".

center/LR balance: the volume of the *center*-delay relating to the volume of the *left* & *right* delay.

wet: the *balance* of the volume between *delayed* and original signal. .

Chorus

The *Chorus* effect can be used to "thicken" a single sound creating the impression that it contains multiple voices. The *Chorus* works by mixing delayed signals with the original signal.

The Organ 3´s Chorus features the following controls:

time the *time* dial is used for setting the *delay time*. Longer times produce a "chorusing" effect while shorter times create a "flanging" effect.

rate: the *rate* dial sets the *rate* at which the signal is modulated.

width: controls the stereo-width of the *Chorus* effect. To the very left the *Chorus* will sound mono, moved to the right the stereo-width increases.

dry: the *volume* of the *unprocessed* signal.

wet: the *volume* of the *processed* signal.

Gator

The *Gator* effect is a step-controlled audio gate that can be used to create rhythmic, stuttering and pulsing effects. The effect is unique in that it separates the input signal into left and right components, each of which can be gated independently.
It contains controls for *soft*, *edit mode, sync* and *wet*.

soft: the *soft* control sets the *envelope shape* of the gate for each step value. A lower setting of the *soft* control creates a sharper envelope shape that produces a more pronounced gating effect. increasing the value of the control “smoothes” the envelope creating a more pulsing, tremolo-like sound.

edit mode: the *edit mode* is used to set the way that the Gator's step buttons respond to user input. This control has three settings: *normal, Link* and *XLink*. When set to “*normal*”, each step button can be switched on and off independently of any other button. When set to *Link*, the step buttons for the left and right patterns are linked together so that switching either button turns both buttons on or off. When set to *XLink*, the step buttons for the left and right patterns are linked together, however in this

case they work in a complementary manner—when one button is on, the other will be off. In this case only one of the two left and right channel buttons can be switched on at the same time.

sync: the *sync* control sets the *duration* of each step. For example, a setting of 1/16 means that each pattern step is equivalent to a 16th note. Note that the overall tempo at which the *Gator* effect operates is set in the host software.

wet: the *wet* control sets the *balance* between the *dry input audio signal* and the *"wet" gated audio signal*. Increasing the value of the *wet* control also increases the width of panning between the left and right step channels.

The *Steps* control consists of two rows of sixteen "buttons", one for each rhythmic step of the pattern. When a button is on, the signal is passed through the effect. Alternately, when a button is off, the signal is gated. The duration of each step depends on the setting used in the *sync* control.

Crusher

The *Crusher* is a distortion effect that combines *bit-depth* and *sample-rate reduction* allowing the resolution of the signal to be decreased, thereby making the sound rougher and noisier. This effect processor also includes a filter.

This effect has the following controls: *bits, filter type, cutoff, reso* (resonance), *divider, divider mode, mode* and *wet*.

bits: the *bits* control enables you to reduce the *bit depth* of the output. Reducing the bit depth adds a harsh, noisy quality to the sound.

filter type: *the filter type* pop up menu allows you to select one of four 12 dB filter types: LP12 (Low Pass 12 dB), HP12 (High Pass 12 dB), BP12 (Band Pass 12 dB) and BR12 (Band Reject 12 dB).

cutoff: the *cutoff* control is used to set the frequency above which frequencies are filtered out of the signal. Higher settings produce brighter

sounds while lower settings result in darker sounds.

reso: *reso(nance)* is used to set the *amount of emphasis* around the cutoff frequency. Higher settings create a more pronounced peak in the signal while lower settings produce a flatter response.

divider: the *divider* control sets a *sample-rate divider* that divides the current sample-rate by the current control setting.

divider mode: the *divider* mode pop up menu determines how the output sample value is created from the input samples. Three options are available: "*AVG*", "*STP*" and "*SLD*". The "*AVG*" ("Average") option calculates the *average* of the input samples and uses this as the output sample value for each of the input samples. The "*STP*" ("Step") option takes the first sample in each group of input samples and uses this as the output sample value for each of the input samples. The "*SLD*" ("Slide") option takes the first sample in each group of input samples, interpolates between them and uses the interpolated value as the output sample value for each of the input samples.

mode: changes the *signal flow* of the *Crusher*:
1 = bit-reduction -> filter -> divider
2 = bit-reduction -> divider -> filter

wet: the *wet* dial allows you to set the *balance* between the *processed "wet" signal* and the original *unprocessed "dry" signal*.

The „Settings“ page

The *Settings* page is located on the right side of the user interface. You open it by clicking the “*Settings*” tab. The following controls can be found in the *Settings* Menu: the number of the version of Organ 3, the serial number, the Dial Mode, MIDI Config, Master Tune, Pitch bend Up, Pitch bend down, Invert bar CC, MIDI Channel, Scale, Wave, the B3 mode with its controls for Foldback, Sync, Vol, Perc 9 & Steps, the envelopes of the three manuals and the split points of the manuals.

Version: the number of the version of your Organ 3 installation.

S/N: please enter your personal serial number of Organ 3 in this field. Note: to prevent the stealing of serial numbers the shown number is shortened.

Dial Mode: *Dial Mode* is used to select the Organ 3´s *dial operation mode*. Two modes are available: "*Cir*" (Circular) and "*Lin*" (Linear). In "*Cir*" mode the Organ 3´s dials track cursor movement in a *circular* fashion around the dial. In "*Lin*" mode the Organ 3's dials track *vertical* cursor movement.

MIDI Config: determines whether Organ 3 only receives MIDI-data or is

also able of sending MIDI-data. Sending MIDI-data is especially useful when using a MIDI-controller like the Doepfer d3c, the Native Instruments B4D or the Behringer BCF2000, which are able to display several settings of Organ 3 on their user-interface.

Master tune: *Master tune* is used to set the *overall tuning* of the Organ 3 if no microtuning file is loaded . Tuning can be set from 415.3 Hz to 466.2 Hz.

P.bend up: *the P.bend up* range control is used to set the Organ 3's response to upwards pitch bend messages.

P.bend down: *the P.bend down* range control is used to set the Organ 3's response to downwards pitch bend messages. This control can also be set to "*Link*" in which case the Bend down range is the same as the Bend up range.

Scale: lets you choose the *scale* of Organ 3. The setting "*Tonewheel*" slightly differs from the equal-tempered scale because the mechanical construction of the tonewheels wasn't able to exactly reproduce all of the equal-tempered frequencies.

Clicking the disk symbol opens up a dialogue from where you can load TUN-files containing microtuning-data. See Appendix D for a complete description of the microtuning capabilities of Organ 3.

Invert Bar CC: *inverts* the function of *MIDI-faders*, so the volume of the drawbars become louder when you move the fader *downwards*. At normal operation the volume would decrease.

MIDI Channel: the *basic MIDI-channel* of Organ 3. If the *MIDI-channel* is set on channel 5, the Upper Manual receives its MIDI-information in channel 5, the Lower Manual on channel 6 and the Pedal on channel 7. If the *MIDI-Channel* is set on channel 16, the Upper Manual receives its MIDI-information in channel 16, the Lower Manual on channel 1 and the Pedal on channel 2.

Wave: the *Wave* pop up menu lets you select the basic waveforms generated by the tonewheels of Organ 3.

Three of them are basic waveforms: sine, triangle and sine/triangle (a mixture of sine & triangle).

Ther others are different sample sets of the B3, Vox and Farfisa (B3 1, B3 2, B3 3, Farfisa 1, Farfisa 2, Farfisa 3, Vox 1, Vox 2 and Vox 3) each with different brilliance, allowing to create brighter as well as darker sounds. There is also a set of “daOrgan”, the predecessor of Organ 3 .

Note: the sound of organs like the Vox Continental or the Farfisa is very unique and that’s not only because of different basic waveforms. Simply loading samples of those organs will not create an exact reproduction of those instruments.

B3 Mode

B3 mode contains the controls for the following functions: *Foldback, Sync, Vol, Perc 9* and *Steps*.

Foldback: this function simulates a property of the historical electronic organs. The tonewheels of those instruments weren’t able of producing extremely high frequencies and the upper tone range of the high drawbars was limited. The notes that were too high to be generated by

the tonewheels jumped one octave lower. When you activate the *Foldback* button the drawbars of Organ 3 behave like those historical electronic organs. Above MIDI-note number 79 the high drawbars jump one octave lower.

Sync: as the tonewheels of the historical electronic organs rotated synchronous, all the played notes had a defined phase. This property can be imitated by switching the *Sync* button on. When switched *off*, each played note has its own starting phase.

Vol: the original Hammond B3´s drawbars had a preset maximum-volume. The high drawbars had a lower maximum-volume than the deeper registers. If you turn *Vol on*, Organ 3 provides the same maximum-volume presets as the Hammond B3. When turned off, all the drawbars have an equally high maximum-volume.

Perc 9: whenever "*Percussion*" was used on the original Hammond B3, the 9th drawbar wasn't sounding anymore. The Percussion was "stolen" from that stop. When you switch *Per 9 on*, Organ 3 behaves like the Hammond B3: as soon as you use Percussion, the 9th drawbar will be quiet. With *Perc 9 deactivated*, the 9th drawbar is available, even if Percussion is in use.

Steps: activate/deactivates the "9-steps-only" volume adjusting of the original Hammond B3. When activated the drawbars behave like the original drawbars. This setting is useful when programming sounds "from the paper" as there are only 9-step-volume settings written (like 80 8800 408). With *Steps* deactivated the drawbar's volume can be set without steps, allowing more precise settings.

Envelopes

An *envelope* is a time-varying signal used to control the development of another signal after it has been triggered. Envelopes are most often used for controlling a signal's *amplitude*. That's what the envelopes of Organ 3 are for. The Envelopes of *the Upper Manual, Lower Manual* and *Pedal* contain the following controls: *Attack*, *Decay*, *Sustain*, *Release*.

Attack: the time the sounds takes to reach the full volume after pressing a key .

Decay: the time to fall from the Attack volume to the Sustain volume.

Sustain: the volume of the sound while keeping a key pressed.

Release: the time the sound takes to fade out after a key has been released. This parameter can also be altered using the Release dial to the left of each manual.

Note: to create a classical organ-envelope, the *Attack*-time has to be set to minimum, *Sustain* to maximum and *Release* to minimum. With *Sustain* set to maximum the *Decay*-time has no effect.

Split Points & Octave

To the right of the *Envelope* dials are the controls for setting the manual's *split points* as well as the *octave*.

The one-digit number represents the octave of the respective manual. It can be set from –4 over 0 to +4 octaves.
Beneath the octave is the split point of the according manual. It can be set from C-2 to G8.

A split point can be set between Upper and Lower Manual, as well as between the Lower Manual and the Pedal.

You can alter both parameters by left-clicking, keeping the mouse-key pressed and drawing the mouse upwards / downwards.

Note: the split point between Lower Manual and Pedal has no effect in Split-Mode 1.

Appendix A: MIDI Implementation Chart

Product: LinPlug Organ 3 Version 3.x Date: 27.Oct 2006
Manufacturer LinPlug Virtual Instruments GmbH

Function	Transmitted	Recognized	Remarks
Basic Channel			
Default	no	no	
Changed	no	no	
Mode			
Default	no	Omni	
Changed	no	no	
Note Number			
	no	**yes**	
True Voice	no	no	
Velocity			
Note On	no	**yes**	
Note Off	no	no	
Aftertouch			
Poly (Key)	no	**yes**	
Mono (Channel)	no	**yes**	
Pitch Bend	no	**yes**	
Control Change	no	**yes**	see Appendix B
Program Change	no	no	
System Exclusive	no	no	
System Common			
Song Position	no	no	
Song Select	no	no	
Tune Request	no	no	
System Realtime			
Clock	no	no	
Commands	no	no	
Aux Messages			
Local On/Off	no	no	
All Notes Off	no	**yes**	
Active Sensing	no	no	
System Reset	no	**yes**	

Appendix B: Predefined ECS assignments

The following MIDI-CC-parameter-assignments are automatically set up on start-up of Organ 3. Of course, the assignments can be replaced with your own preferences using the ECS button.

Ch 0 CC 1 Rotary Speed
Ch 0 CC 7 Main Volume
Ch 0 CC 12 Upper 16
Ch 0 CC 13 Upper 5 1/2
Ch 0 CC 14 Upper 8
Ch 0 CC 15 Upper 4
Ch 0 CC 16 Upper 2 2/3
Ch 0 CC 17 Upper 2
Ch 0 CC 18 Upper 1 3/5
Ch 0 CC 19 Upper 1 1/3
Ch 0 CC 20 Upper 1
Ch 1 CC 12 Lower 16
Ch 1 CC 13 Lower 5 1/2
Ch 1 CC 14 Lower 8
Ch 1 CC 15 Lower 4
Ch 1 CC 16 Lower 2 2/3
Ch 1 CC 17 Lower 2
Ch 1 CC 18 Lower 1 3/5
Ch 1 CC 19 Lower 1 1/3
Ch 1 CC 20 Lower 1
Ch 2 CC 12 Pedal 16
Ch 2 CC 13 Pedal 5 1/2
Ch 2 CC 14 Pedal 8
Ch 2 CC 15 Pedal 4
Ch 2 CC 16 Pedal 2 2/3
Ch 2 CC 17 Pedal 2
Ch 0 CC 21 Lower 16
Ch 0 CC 22 Lower 5 1/2
Ch 0 CC 23 Loweer 8
Ch 0 CC 24 Lower 4
Ch 0 CC 25 Lower 2 2/3
Ch 0 CC 26 Lower 2
Ch 0 CC 27 Lower 1 3/5
Ch 0 CC 28 Lower 1 1/3
Ch 0 CC 29 Lower 1
Ch 0 CC 30 Lower Vibrato on/off
Ch 0 CC 31 Upper Vibrato on/off
Ch 0 CC 33 Pedal 16
Ch 0 CC 35 Pedal 8
Ch 0 CC 66 Upper Percussion on/off
Ch 1 CC 66 Lower Percussion on/off
Ch 0 CC 67 Pedal Vibrato on/off
Ch 0 CC 68 Rotary Stop
Ch 0 CC 69 Velocity Responce
Ch 0 CC 70 Percussion Volume
Ch 0 CC 71 Upper Percussion Decay
Ch 1 CC 71 Lower Percussion Decay
Ch 0 CC 72 Upper Percussion Harmonic
Ch 1 CC 72 Lower Percussion Harmonic
Ch 0 CC 73 Vibrato Chorus
Ch 0 CC 74 Vibrato Intense
Ch 0 CC 75 Keyclick
Ch 0 CC 76 Overdrive
Ch 0 CC 78 Overdrive Body
Ch 0 CC 79 Overdrive Brightness
Ch 0 CC 81 Rotary Slow High-Speaker
Ch 0 CC 82 Rotary Slow High-Speaker
Ch 0 CC 83 Rotary Acceleration High-Speaker
Ch 0 CC 84 Reverb wet
Ch 0 CC 85 Reverb Predelay
Ch 0 CC 86 Reverb Roomsize
Ch 0 CC 87 Reverb Modulation
Ch 0 CC 88 Reverb Damp
Ch 0 CC 91 Rotary Slow Low-Speaker
Ch 0 CC 92 Rotary Fast Low-Speaker
Ch 0 CC 93 Rotary Acceleration Low-Speaker
Ch 0 CC 102 Vibrato Speed
Ch 0 CC 103 Vibrato Tremolo
Ch 0 CC 104 Rotary Crossover
Ch 0 CC 105 Rotary Width
Ch 0 CC 106 Rotary Depth
Ch 0 CC 107 Spread Upper
Ch 0 CC 108 Spread Lower
Ch 0 CC 109 Spread Pedal

Appendix C: Sync settings

Off, 1/2, 1/2T, 1/4*, 1/4, 1/4T, 1/8*, 1/8, 1/8T, 1/16*,1/16, 1/16T, 1/32*, 1/32, 1/32T.

Note: "T" stands for Triplet and "*" stands for a dotted note. In the case of a dotted note, the note duration is equal to 1.5 times its original undotted value.

Appendix D: Using TUN Files

By Jacky Ligon

About Microtuning

Microtuning, or "microtonality" are methods for tuning musical instruments whereby musicians may explore and compose with ethnic, historical and contemporary tuning-systems. Microtuning musical instruments allows one to use scales which may have pitches lying between the notes of our familiar Western 12 tone scale. These pitches which are found in the 'cracks' of 12 Tone Equal Temperament are one of the things that give music's of Bali, India, Africa, Thailand, Turkey and the Middle East (to name but a few) a special intonational flavor, but is something that is of immeasurable value to the contemporary acoustic and electronic composer, who may require a more broad palette of musical pitches for their music.

The quest for creating beautiful and musically useful tuning-systems has been an unending process of discovery and debate amongst musical theorists, mathematicians, physicists and musicians going back to early history. Quite often the reasons for microtuning instruments may involve improving the consonant intervals of a tuning-system for sweeter sounding harmonies, as well as offering wider variety of choices for melody. "Microtuning" an instrument can sometimes mean there may be less or more than 12 tones in an octave, or even that the octave itself may be stretched or compressed. Microtuning is a vast topic, rich with lore, music and an infinity of musical possibilities for the sonic explorer.

Creating TUN microtuning files with SCALA

Scala is a freeware utility developed by Manuel Op de Coul in the Netherlands, which can be used for the creation and analysis of historical, ethnic and contemporary microtunings. A powerful capability of Scala is that it enables the user to create the proprietary tuning data required for microtuning a wide range of hardware and software synthesizers and samplers.

Scala may be used to create the TUN format microtuning-files needed to explore microtunings with this instrument.

The Scala home page is http://www.xs4all.nl/~huygensf/scala/

Specifying the Reference Frequency of a Microtuning

One of the powerful capabilities of the TUN file format and Scala, is the ability to specify the pitch and midi note which will be the reference pitch for the microtuning in use. This becomes a very important consideration when one is using a number of different synthesizers and wishes to keep them in tune with a given base frequency. It is very common for one to specify a chosen concert pitch such as A440 Hz or C261.6256 Hz as a reference for a microtuning, however, the flexibility of the TUN format and Scala enables one to specify this frequency arbitrarily. In Scala this reference is called Map Frequency.

As well as being able to specify the Map Frequency, one can also specify a central midi-note, which will become the starting point for the microtuning in use. Being able to specify a particular midi-note on the controller, provides a way to map a microtuning beginning on any desired midi key, making it easier to navigate the keyboard when there may be more or less than 12 tones per octave, or where one may desire to have the notes of a tuning fall on certain physical keys.

Important Note

When one uses a TUN microtuning-file in the , the above specified mapping properties will override the Master Tuning reference. Normally when one is using the default 12 Tone Equal Tempered Scale, the Master Tuning will be used to make fine pitch adjustments around the standard concert pitch of A440 Hz, but when one has specified another pitch base for a microtuning when the TUN file is created in Scala, such as C261.6256 Hz, the data in the TUN microtuning-file will provide a new pitch reference.